

REMARKS/ARGUMENTS

Claims 1, 9, 17, 18 and 19 were amended. Claims 2-5, 10-13 remain unchanged. Claims 6-8 and 14-16 were previously withdrawn, as being drawn to a non-elected invention. New claims 20-25 are added. New claims 20-22 depend upon claim 1 and new claims 23-25 depend upon claim 9.

Claims 1, 9, 17, 18 and 19 were amended to specify that the free and continuous speech natural utterance comprises “at least one of sound segments corresponding to words or phrases having the same meaning as other words or phrases corresponding to different sound segments, respectively, (*i.e., synonyms*), sound segments corresponding to words or phrases having different spellings and different meanings, (*i.e., homophones*), sound segments corresponding to words or phrases having the same spellings and different meanings, (*i.e., homonyms*) or sound segments corresponding to words or phrases having a meaning that is subject area dependent”. This subject matter is described in the original provisional application 60/274,786 filed on March 12, 2001 and was incorporated in the present utility application by reference (page 1, [0001]). The specific references in the provisional applications are: for synonyms on page 4, lines 29-34 and page 26, lines 24-29; and for homonyms and homophones on page 32, lines 21-31.

The following examples show the manifestations of the homonymy (called also polysemy for more-than-one-word phrases) in the free continuous speech natural language:

“I want these wheels for rent for the whole next week” versus “I want these wheels balanced and rotated before 3 p.m.”, where one and the same phrase “I want these wheels” appears in different meanings in different levels and branches of the hierarchy; or

“I would like to take a car like Taurus but unfortunately a car like Taurus is too small for my family”, where “a car like Taurus” appears twice in one and the same user’s address: first time meaning “right car” while second time meaning “wrong car”.

The correct interpretation of the phrase “a car like Taurus” is secured in this example by context-forming phrases “I would like to take” in its first appearance and “but

unfortunately” in the second one. Such context-forming phrases are classified regarding their roles and gathered in sub-dictionaries called “context-sensitive”. The formulated rules of interaction of context-forming phrases lead to grasping the general sense of the address that can be expressed as “Give me something larger than Taurus”.

The Examiner rejected independent claims 1, 9, 17, 18 and 19 under 35 USC 103(a) as being anticipated by Junqua (6,598,018 B1) in view of Thelen et al. (US 6,526,380). The Examiner argued that Junqua teaches all the steps of claim 1 except of the hierarchically organized context sensitive dictionary system and that Thelen et al teach such a context-sensitive dictionary system. Applicant respectfully disagrees with the Examiner’s interpretation of the cited text references in Junqua and Thelen et al.

In particular, the Examiner claimed that the step of receiving a symbolic representation of a free continuous speech language is described by Junqua in column 1, lines 55-65, column 2, lines 12-18. Junqua refers to “natural language interface” and “natural language parser” in the mentioned citations. However, Junqua makes no reference to free continuous speech natural language comprising at least one of sound segments corresponding to words or phrases having the same meaning as other words or phrases corresponding to different sound segments, respectively, (*i.e.*, *synonyms*), sound segments corresponding to words or phrases having different spellings and different meanings, (*i.e.*, *homophones*), sound segments corresponding to words or phrases having the same spellings and different meanings, (*i.e.*, *homonyms*) or sound segments corresponding to words or phrases having a meaning that is subject area dependent.

From the context of Junqua’s system usage and the examples given in column 3 lines 59-67 to column 4 lines 1-16, it is understood that Junqua’s system is based on simple command responses that fill slots in predefined templates. Essentially as Junqua claims, “the parser operates on a goal-oriented basis identifying keywords and phrases from the recognized speech and using those recognized words and phrases to fill slots in predefined templates or frames that represent different goal-oriented tasks.” (column 1,

lines 65-67 to column 2 lines 1-3). However, if instead of the expected keyword a synonym is used, the correct keyword will not be identified correctly thereby causing miscommunication with the system. Similarly, due to homophony or homonymy, the wrong keyword may be identified causing again miscommunication with the system or the sense of what the speaker tries to convey is missed, as was described in the examples above.

In order for the Junqua system to be able to decipher truly “free and continuous speech” it would require infinite number of predefined templates to be able to address every possible combination of words, synonyms, homonyms, homophones and other subject area dependent expressions, that occur in “free and continuous speech”. This will increase the computer processing time making real time processing and response very difficult. In other words, Junqua’s system can convert small verbal command inputs to physical action such as turning on a radio or giving directions to a specific destination, but cannot understand truly “free and continuous speech” due to the occurrence of synonymy and polysemy (homophony, homonymy and subject-area dependent meaning).

Furthermore, as the Examiner stated on page 7 of the office action of June 27, 2007, Junqua does not teach using a hierarchically organized context-sensitive dictionary. Furthermore, as was mentioned in the previous office action Junqua does not teach the sequential selection of subject area identifier, module identifier, argument identifier, and value identifier in order to produce computer instructions. Accordingly it is believed amended claims 1, 9, 17, 18 and 19 are patentably different from Junqua’s system.

The Examiner further argued that Thelen et al teach a hierarchically organized context-sensitive dictionary system. However, again Thelen et al do not refer to free continuous speech natural language comprising at least one of sound segments corresponding to words or phrases having the same meaning as other words or phrases corresponding to different sound segments, respectively, (*i.e., synonyms*), sound segments corresponding to words or phrases having different spellings and different meanings, (*i.e., homophones*), sound segments corresponding to words or phrases having the same

spellings and different meanings, (*i.e., homonyms*) or sound segments corresponding to words or phrases having a meaning that is subject area dependent.

From the context of the Thelen et al system we observe again selection of a recognition model by a model recognizer 360 based on “keywords”, “tags” or direct selection by the user (column 8, lines 5-35). As was mentioned above, if instead of the system-expected keyword a synonym is used, the correct recognition model will not be identified thereby causing miscommunication with the system. Similarly, due to homophony or homonymy, the wrong recognition model may be identified causing again miscommunication with the system, or the sense of what the speaker tries to convey is missed, as was described in the examples above.

Furthermore Thelen et al, do not teach the specific sequence for selecting “a recognizer model” (using Thelen’s terminology), by first determining a subject area identifier, followed by determining a module identifier based on the previously determined subject area identifier, followed by determining an argument identifier based on the previously determined module identifier, followed by determining a value identifier based on the previously determined module identifier, and then producing computer instructions based on the determined subject area identifier, module identifier, argument identifier, and value identifier. On the contrary, Thelen et al select a recognizer model based on keywords and then perform a test using the test recognizer 334 to determine which recognition model is best suited for the recognition at hand (see column 8, lines 35-53). Accordingly, since the sequential selection of subject area identifier, module identifier, argument identifier, and value identifier is not used by Thelen et al in order to select the recognizer model, the present invention of claims 1 9, 17, 18 and 19 is patentably distinguishable from Thelen et al.

In summary, the differences between the present invention as claimed in claims 1, 9, 17, 18 and 19 and the Junqua patent include:

- A. Production of computer instructions from unrestricted “free and continuous speech natural language utterances comprising synonyms, homonyms, homophones or words having subject-area dependent meaning”.
- B. Computer understanding based on sequential selection of a subject area identifier, a module identifier, an argument identifier and a value identifier.
- C. Production of computer instructions based on the determined subject area identifier, the module identifier, the argument identifier and the value identifier.
- D. Use of hierarchically organized context-sensitive dictionaries including subject areas, sub-subject areas, program modules, arguments and values.

The differences between the present invention as claimed in claims 1, 9, 17, 18 and 19 and the Thelen et al patent include:

- A. Production of computer instructions from unrestricted “free and continuous speech natural language utterances comprising synonyms, homonyms, homophones or words having subject-area dependent meaning”.
- B. Computer understanding based on sequential selection of a subject area identifier, a module identifier, an argument identifier and a value identifier.
- C. Production of computer instructions based on the determined subject area identifier, the module identifier, the argument identifier and the value identifier.

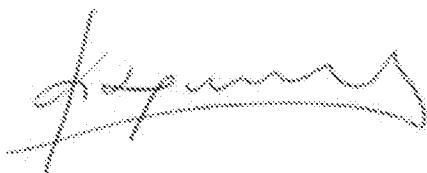
Even if one combined Junqua and Thelen et al, the combination would still be different from the present invention because of A, B and C. Based on these differences it is believed that claims 1, 9, 17, 18 and 19 are patentably distinguishable from Junqua alone, from Thelen et al alone and from the combination of Junqua with Thelen et al.

Accordingly, it is believed that the 35 USC 103 rejection of claims 1, 9, 17, 18 and 19 is overcome and claims 1, 9, 17, 18 and 19 should be allowable. Claims 2-5 and 20-22 depend upon claim 1 and claims 10-13 and 23-25 depend upon claim 9. Since claims 1 and 9 are patentably distinguishable from Junqua and Thelen et al, they should also be patentably distinguishable from Junqua and Thelen et al, and should be also allowable.

In view of the above, it is submitted that claims 1-5, 9-13, 17, 18, 19, 20-25 are in condition for allowance. Reconsideration of the rejection is requested and allowance of these claims at an early date is solicited

If this response is found to be incomplete, or if a telephone conference would otherwise be helpful, please call the undersigned at 781-235-4407

Respectfully submitted,

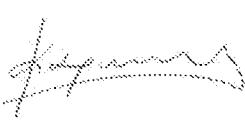


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